

Appl. No. 10/648,154
Amdt. dated September 11, 2006
Reply to Office Action of July 10, 2006

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Remarks

The present amendment responds to the final Official Action dated July 10, 2006. The Official Action rejected claim 1 under 35 U.S.C. § 101 as directed to non-statutory subject matter. Claims 1 and 12 were rejected under 35 U.S.C. § 103(a) based on Kitamura et al. U.S. Patent No. 5,197,145 (Kitamura) in view of Hooker et al. U.S. Patent No. 6,609,191 (Hooker). Claims 1-10, 12, and 42-44 were rejected under 35 U.S.C. § 103(a) based on Hirata et al. U.S. Patent No. 5,430,851 (Hirata) in view of Blackmon et al. U.S. Patent No. 6,895,482 (Blackmon) and in view of Hooker. Claims 13-15 were rejected under 35 U.S.C. § 103(a) based on Hirata in view of Blackmon in view of Hooker as applied to claim 12, and further in view of Kishida et al. U.S. Patent No. 6,065,112 (Kishida). These grounds of rejection are moot in light of the proposed amendments addressed below.

Claims 26-41 were allowed.

Claims 16-24 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form. Claim 12 has been canceled without prejudice and claim 17 has been rewritten in independent form with clarifying amendments as addressed below.

Claims 1 and 42 have been amended to include subject matter like that found in claim 17 and to include clarifying amendments as discussed below.

Claims 1-4, 6-11, 13-24, and 26-44 are presently pending.

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Interview Summary

The Examiner is thanked for the courtesy of a telephone interview with Dr. Pechanek on September 6, 2006 concerning the above case. Claims 1 and 17 were discussed as addressed below.

Claim 17 was objected to as being dependent upon a rejected claim 12. It was proposed to cancel claim 12 and rewrite claim 17 in independent form containing all the limitations of the base claim 12 from which it previously depended. It was also proposed to amend claim 17 to make clear the "IF instructions" are of "a first IF instruction type" and "a second IF instruction type". Claims 13-16 and claims 18-21 were to be amended to clearly indicate "the first IF instruction type", "the second IF instruction type", and a "third IF instruction type". Agreement was reached that this type of change was acceptable to the Examiner subject to his consideration of the final language in writing.

Claim 1 was also discussed. Dr. Pechanek proposed that the subject matter of claim 17 be adapted and included in claim 1. The limitations from the rewritten claim 17 now included in adapted form in claim 1 include an IF instruction type for parallel multiple-issue instructions, having two instruction memories for non-control instructions, and a programmable fetch of IF instructions and when executing the IF instruction type for parallel multiple-issue instructions generating at least two instruction memory addresses to select non-control instructions to be fetched from the at least two instruction memories for execution in parallel. The non-control instructions are the "arithmetic/logic (AL) instructions" of claim 1. Agreement was reached that this type of change would be helpful and would be considered when submitted in writing. The

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Examiner also suggested that the word transform in claim 1 be changed to execute or the like and the steps of the claim reflect steps of the program being claimed. Dr. Pechanek agreed to consider making such an amendment and such an amendment is now being made.

Dr. Pechanek is available at 919-806-1600 x7 for further discussion of this amendment.

Header Correction

In item 2 of the Official Action, the Examiner noted an error in the header on each page indicating an incorrect serial number. The serial number in the header on each page of the present Amendment has been changed to 10/648,154.

Section 101 Rejection

Claim 1 was rejected under 35 U.S.C. § 101 as directed to non-statutory subject matter. Claim 1 has been amended to claim a "computer implemented method to execute a code splitting program", further reciting components of the "control structure instructions including a selected set of program address changing instructions", and to incorporate elements of the rewritten claim 17 including two AL instruction memories and "a second IF instruction type has a second IF instruction format which contains information to identify for parallel execution at least one assigned address of at least one AL instruction from the first AL memory and at least one assigned address of at least one AL instruction from the second AL memory".

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Claims 26-41

Claims 26-41 stand allowed.

Claims 17, 13-16, and 18-24

The Official Action objected to claim 17 as being dependent upon a rejected base claim, but indicated it would be allowable if rewritten in independent form. Claim 17 has been rewritten in independent form containing all the limitations of the base claim 12 from which it previously depended. Claim 17 has been amended to make clear the IF instructions are of "a first IF instruction type" and "a second IF instruction type". Claims 13-16 and claims 18-21 have been amended to clearly indicate "the first IF instruction type", "the second IF instruction type", and a "third IF instruction type". Claims 13 and 23 have been amended to depend from claim 17. Claims 13-24 are in order for allowance.

Claims 1-4, 6-11, 42-44

Claim 1 has been amended to include the allowable subject matter of claim 17. In particular, "a first IF instruction type", "a second IF instruction type", "a first arithmetic/logic (AL) memory", "a second AL memory", "the IF instructions for programmably selecting AL instructions to be fetched", and "the second IF instruction type has a second IF instruction format which contains information to identify for parallel execution at least one assigned address of at least one AL instruction from the first AL memory and at least one assigned address of at least

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one AL instruction from the second AL memory" have been included in claim 1. Amended claim 1 recites:

1. A computer implemented method to execute a code splitting program comprising the steps of:
 splitting a processor program into a set of control structure instructions including a selected set of address changing instructions and a set of arithmetic/logic (AL) instructions;
 reducing the set of AL instructions to a reduced set of AL instructions by removing duplicate AL instructions;
 assigning to each AL instruction of a first AL instruction type in the reduced set of AL instructions an address in a first AL memory;
 assigning to each AL instruction of a second AL instruction type in the reduced set of AL instructions an address in a second AL memory;
 generating instruction fetch (IF) instructions in a sequencing order determined from the set of control structure instructions and specified by the IF instructions for programmably selecting AL instructions to be fetched from at least one of the first AL memory or the second AL memory, wherein a first IF instruction type has a first IF instruction format which contains information to identify for execution at least one assigned address of at least one AL instruction from the first AL memory or from the second AL memory and a second IF instruction type has a second IF instruction format which contains information to identify for parallel execution at least one assigned address of at least one AL instruction from the first AL memory and at least one assigned address of at least one AL instruction from the second AL memory, whereby the processor program is transformed into a sequence of IF instructions and the reduced set of AL instructions at assigned addresses. (emphasis added)

Claim 42 has been amended in a similar manner to the rewritten claim 17 including "at least two non-control instruction memories (IMemories) each storing a set of non-control instructions, whereby an IF instruction is formatted to identify at least two addresses of the at least two IMemories and said programmable instruction fetch mechanism operating to fetch IF instructions from said IF memory and execute at least one fetched IF instruction to generate at

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least two IMemory instruction addresses to select at least two non-control instruction to be fetched from the at least two IMemories for execution". The amended claim 42 recites:

42. A processor system comprising:
a code splitting tool for transforming a program by generating an instruction addressing control program as a sequence of instruction fetch (IF) instructions and at least one list of non-control instructions, wherein the IF instructions were not used in the program;
an instruction fetch (IF) memory storing the sequence of IF instructions;
a programmable instruction fetch mechanism that is programmed by the IF instructions to fetch and execute IF instructions in a sequencing order, wherein the sequencing order is controlled by information contained in each of the IF instructions;
at least two non-control instruction memories (IMemories) each storing a set of non-control instructions, whereby an IF instruction is formatted to identify at least two addresses of the at least two IMemories and said programmable instruction fetch mechanism operating to fetch IF instructions from said IF memory and execute at least one fetched IF instruction to generate at least two IMemory instruction addresses to select at least two non-control instruction to be fetched from the at least two IMemories for execution and to identify an address for the next IF instruction. (emphasis added)

Claims 1 and 42 having been amended with the allowable subject matter of claim 17 and thus claims 1-4, 6-11, and 42-44 should be allowed on the same basis as the rewritten claim 17.

The Art Rejections

Kitamura, Hooker, Hirata, Blackmon, and Kishida do not support the Official Action's reading of them and the rejections based thereupon should be reconsidered and withdrawn. Further, the Applicant does not acquiesce in the analysis of Kitamura, Hooker, Hirata, Blackmon, and Kishida made by the Official Action and respectfully traverses the Official Action's analysis underlying its rejections.

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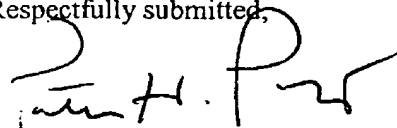
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Applicant does not acquiesce in the rejection of canceled claim 12. However, as claim 12 has been canceled, it is not addressed further herein. The previous grounds for rejection are moot.

Conclusion

All of the presently pending claims 1-4, 6-11, 13-24, and 26-44, as amended, appearing to define over the applied references, withdrawal of the present rejection and prompt allowance are requested. Should the Examiner conclude, following consideration of this Amendment, that further issues remain, it is requested that the Examiner call Dr. Pechanek at the number below to schedule a telephone interview to discuss the issues.

Respectfully submitted,



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